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INDUSTRIES AND LABOUR

QUARTERLY BULLETIN

ELECTRICAL INSPECTION BRANCH

APRIL 1955

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BONDING OF NEUTRAL AND GROUNDING CONDUCTORS - RULE 10-024 (d)

The above rule requires that no bond should exist between the neutral conductor and the system grounding electrode at any point beyond the service equipment except where more than one building is served by a single service. (See Rule 10-026).

The neutral conductor in an alternating current installation should therefore be connected to the system grounding medium at the service equipment only.

WATER SYSTEMS AND DUG WELLS AS GROUNDING MEDIUMS

With the advent of non-metallic water piping, considerable difficulty is being experienced on farms, and in some of the smaller towns and villages, due to interruption of system grounds which have been provided by connection to water systems originally completely metallic.

In view of this it is felt advisable to require the installation of artificial ground electrodes on all farm installations and on installations made in areas in which additions or replacements to the water system may be made with non-metallic piping. If a metallic water system is available at the time of the initial installation, a bond should be run from the ground rod to the water pipe but in all cases the system grounding conductor should be run directly from the service neutral to the ground rod.

Similar comments apply to farm installations which use the well casing in a dug well, as distinct from a drilled well, as the grounding medium. In such cases a ground rod should also be installed and should be used as the primary grounding medium although we would recommend bonding between the rod and the well casing.

SERVICE ENTRANCE CABLE FOR RANGE CONNECTIONS

Special approval of service entrance cable for connection of electric ranges only was originally granted due to the limited supply of other types of cables. At that time, permission was given to use the feeder neutral for grounding the frame of the range. Unfortunat it has been assumed that this type of installation is also acceptable for other types of loads where grounding is required.

The Canadian Electrical Code specifically states that a bare neutral is not acceptable beyond the service overcurrent devices. It also states that the grounded circuit conductor (that is, the neutral on the load side of the connection to ground shall not be used for grounding equipment. (See Rule 10-068).

Since non-metallic sheathed cable with the bonding wire is now available at costs comparative to service entrance cable, it is felt that the special approval originally given for the use of service entrance cable for connection of ranges is no longer required. After July 1st, 1955, service entrance cable will be acceptable for service entrances only.

In addition, either a continuous metallic conductor enclosure or a separate conductor must be provided for grounding of all equip ment on the load side of the service switch.

DIRECT BURIAL OF MOISTURE RESISTANT NON-METALLIC SHEATHED CABLE

Type N. M. W. cable will be accepted for direct earth burial in sizes not exceeding No. 10 B. &S. Gauge and if not more than three conductors are contained in the cable.

Cables of this type buried in direct contact with the earth will be subject to the same requirements as open conductors so installed That is, the cable must be snaked in loosely, buried at least 18 inches in all cases, and 3 feet under ground subject to heavy traffic, and be protected by a two-inch creosoted plank or equivalent.

INSTALLATION OF EXIT LIGHTS - SECTION 46 and RULE 12-200

It should be noted that section 46 of the Code applies specifically only when emergency lighting systems are installed and that Rule 12-200 does not require that exit lights be installed in conduit.

For buildings in which the installation of emergency lighting is not anticipated, we will therefore in future require only that the exit lights be installed on a separate circuit and will permit their installation in the same type of wiring as used in the remainder of the building. This will also permit the installation of exit lighting conductors in the same raceway with conductors of other lighting circuits.

It should be noted that if emergency lighting is added in a building subsequent to the initial installation, the requirements of Section 46 would become effective.

HERMETICALLY-SEALED SWITCH CONTACTS - RULE 18-074 (a)

The above rule permits the use of a general-purpose switch enclosure in a Class 1, Division 2, area provided that the contacts are enclosed in a chamber hermetically sealed against the entry of gases or vapors.

Mercury switches do not meet this requirement due to the not infrequent rupturing of the glass envelope containing the mercury with resultant exposure of the arc to the atmosphere and the possibility of breakage of the flexible leads to the mercury envelope.

There are, however other types of switches available in which the contacts are solidly embedded in a sealing compound and such types would be acceptable in general purpose enclosures if installed in Class 1, Division 2, locations.

CHARGES FOR REINSPECTIONS

Regulation 31 (j) of the Permit Regulations provides that the permit fee for an installation shall entitle the permit holder to two inspections of his work, where necessary, without any additional charge being made.

This is meant to apply to those installations which normally might be expected to require a maximum of two inspections, although in many cases they should require only one. It is not meant to apply to the larger installations on which regular inspections are made throughout the course of the work and which are assessed higher fees.

It is found that many of the former types of installations are requiring reinspections, in excess of the two covered by the permit fees, due to corrections being required to bring the installations up to Code Standards. These additional inspections have now reached such proportions as to cause a great deal of additional work and expense to the Inspection Department. The extra time involved in such inspections makes it very difficult to carry out the initial inspection on new installations as soon as desirable.

In view of these conditions, instructions have been given to all District Offices to charge for these additional inspections on the basis of the schedule given in Regulation 33 (b) of the Permit Regulations.

These charges will also apply to inspections requested of existing installations with regard to the additions or corrections that may be required.

RECESSED FIXTURES

Contractors are reminded that the requirements of Rule 30-054 must be met when installing recessed fixtures.

Some units are now available in which the junction box for termination of the circuit conductors is supplied as an integral part of the unit. In some cases these units are acceptable as supplied and the circuit conductors may be run directly into the junction box provided. In others, an additional junction box must be installed for termination of the fixture conductors.

The units which require the installation of an additional junction box must be provided with at least 4 feet of tap connection conductors as required by Rule 30-054 (2) (b). If these conductors are provided by the manufacturer it should, of course, indicate that the circuit conductors are not to be run directly to the fixture but must terminate in an externally mounted junction box.